

A NOTE ON SEX IN *ROYENA GLABRA* L. (EBENACEAE).

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The small shrub *Royena glabra* L. is widely spread in the Western Province and is particularly common on the slopes in the northern part of the Cape Peninsula. In the description given by Hiern in Vol. IV § 2, p. 457 of the *Flora Capensis* the flowers of this plant are said to be hermaphrodite or polygamous; the anthers about $\frac{1}{13}$ in. (approximately 2 mm.) long, not always fertile; the fruit globose or oblong, $\frac{1}{3}$ to $\frac{2}{3}$ in. (8—17 mm.) long, purple or reddish, and the seed spheroidal, *black*.

I was recently asked to collect some seeds of this *Royena* for growing in the famous gardens of Tresco Abbey in the Scilly Isles and was at once struck by the fact that only a small proportion of the bushes bore fertile fruit. These fertile fruits are oblong or oblong-ellipsoid, usually 13—18 mm. long and 6—9 mm. in diam., at first green, then turning to deep reddish plum colour and are finally black and wrinkled before falling. Very rarely a deformed fertile fruit may be found which approaches spherical in shape. The seed, freed from the pulp, is ellipsoid or oblong-ellipsoid, extremely hard and shining chestnut brown, usually solitary, often 1—1.5 cm. long and 4—5 mm. in diam., but occasionally found in adpressed pairs, with the adjacent faces flattened.

Most of the bushes bear no fruits at all, while others produce a few, or more rarely many small abortive, almost spherical fruits, usually 4—7 mm. long, which produce no seeds. These abortive fruits sometimes persist on the plants during the following flowering season. Both abortive and fertile fruits are puberulous.

These observations suggested that the flowers of this species were possibly dioecious for, though a large number of bushes were examined in the neighbourhood of Kirstenbosch and Wynberg Hill, no fertile fruits could be found on the suspected male plants, although they were usually copious on the supposed female plants.

Later, in the flowering season, the flowers of certain marked plants were examined and it was found that the anthers of the supposed ♂ plants, including those bearing abortive fruits, varied from 2—3 mm. in length and bore copious pollen, whereas the anthers of the plants which bore fertile fruits were only 1 mm. long or less, and entirely devoid of pollen. Furthermore, the flowers of many more plants examined in the field showed that the sex could be at once determined by the marked difference in the size of the anthers. The comparatively few, suspected as ♀ from the small anthers, have been found later to be producing fertile fruits. The ovary

of the ♂ contains 4 ovules and appears to be indistinguishable from that of the flowering ♀. The styles, too, in both seem to be identical. At this stage, therefore, the flowers might easily be taken for hermaphrodite.

An examination of bushes on the slopes near the northern boundaries of Kirstenbosch in February 1953 revealed that out of 19 adult bushes examined, only 2 bore fertile fruits.

To avoid any suspicion that perhaps a local form or variant of *R. glabra* may occur in the limited area investigated, the flowers of 16 herbarium specimens from the Provinces of Caledon, Ceres, George, Knysna, Paarl, Piketberg, Tulbagh and Worcester, were dissected, and inspection of the anthers showed that 13 were male and only 3 female.

SUMMARY.

It seems, therefore, beyond question that the flowers of *Royena glabra* are dioecious and that the bushes are definitely either ♂ or ♀, the ♂ plants predominating. The important discrepancies in the description in the Flora Capensis may be summarised as follows:—

Organ.	As described in Flora Capensis.	As observed in many living and dried plants.
Flowers	Hermaphrodite or polygamous.	Dioecious.
Anthers	About 2 mm. long, not always fertile.	♂ 2—3 mm. long, fertile. ♀ 0.7—1 mm. long, sterile.
Fruits	8—17 mm. long . .	♂ 6—7 mm. long, abortive, rarely developed. ♀ 13—18 mm. long, fertile.
Seed	Spheroidal, black . .	Ellipsoid or oblong-ellipsoid, shining, brown.

It is presumed that the descriptions of *Royena* given by Mr. Hiern in the Flora Capensis were all made from the study of dried specimens only, and the facts here recorded from field study reveal the difficulties with which the purely herbarium systematist has to contend. In the case of *R. glabra*, he has cited 37 collectings and apparently not been able to arrive at the true facts. It is noteworthy, also, that of the other 16 species described in the Flora Capensis, only one collecting is cited in the case of 6 species and only two or three for 4 others. While it is true that in 4 of these cases the sex of the flowers is not specified definitely and the term subdioecious is used freely in this respect, it seems that full field observation might reveal much that is at present unknown about the sex question in this genus. The casual collecting of individual specimens, whether in flower or in fruit, proves to be of little help in this direction.

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